REMARKS

Claims 41, 42, and 44-49 are pending in the application. Claim 41 is objected to. Claim 49 is rejected under 35 USC 112. Claims 41, 42, and 45-48 are rejected under 35 USC 103(a) as being unpatentable over Popp (US Pat. 7,130,709), in view of Simonetti (US PG Pub. 2002/0176617) and Card (US Pat. 6,970,857). Claim 44 is rejected under 35 USC 103(a) as being unpatentable over Popp in view of Simonetti, in view of Card, and in view of Buda (US Pat. 6,611,724).

Claims 41, 42 and 49 are amended herein. No new matter is added. Claims 41, 42, and 44-49 are presented for examination.

Description of claim amendments

Claim 41 is clarified per Examiner's suggestion in section 1 of the office action by using the term "distinct" instead of "different". Support for selection and correlation of distinct variables is found throughout the specification, for example in FIGs 4 and 5 (distinct variables Ps, P2, P8). Process variables that are distinct or different from each other are defined in Applicants' paragraphs [011] and [057] of the substitute specification.

> [011] "*The process variables can be represented by measuring signals, which are understood in the sense of the patent applications DE 10202092.2 and PCT/DE/03/00093 mentioned above and as yet unpublished as signals which originate from different sources in the process and can be present in any, even different, forms e.g. analog, binary, numeric and/or as a variable physical quantity.*"

Claim 41 is further clarified as suggested by the Examiner on page 10 of the Office Communication regarding "the other measured variable".

In claim 41, a new clause starting "projecting backwards . . ." is added per Examiner's suggestion on page 10, lines 10-11 of the office action. This recitation is supported throughout the specification, especially in paragraphs [014] and [043], and in Figs 2 and 5.

Response to rejections under 35 USC 112

Claim 49 is amended as suggested.

Response to rejections under 35 USC 103(a)

Popp accumulates multiple occurrences of a given inspection parameter, performs statistical analyses, such as average and standard deviation, then compares the result with acceptable ranges (col. 20, lines 45-47, col. 22, lines 28-67). Popp further tries to locate the source of failure by the first failure point (col. 50, lines 8-14). However, Popp does not teach finding an upstream location on a production line that is a source of a later deviation by correlating multiple process variables and projecting backwards to a convergence of these variables.

Applicants' system provides correlations among different process variables, and projects backward to the source of an error based on time correlations (claim 41) and line speed (claims 42, 49). This is not the same as averaging the same inspection measurement over a plurality of product units. Whereas Popp finds the first position of a failure, Applicants can find an upstream location on a production line that is a source of a later deviation by correlating multiple process variables and projecting backwards to a convergence of these variables. Thus, Applicants take into account the complexities of cause and effect based on correlating process measurement signals from different sources.

Applicants' detection system as claimed is fully or partially independent of the automation process control system. In Applicants' par [007], lines 8-9: "*the measuring bus system being such that it is not identical to existing bus systems used for automation*". In par. [089], lines 3-7: "*The decoupling of the measuring and analysis devices from existing automation devices of the industrial process also allows not only a high level of freedom from retroaction when detecting measuring data but also uniform measuring data detection and analysis in the event of modifications within the industrial process.*"

In contrast, the detection system of Popp is connected to his information exchange 1110, which controls the drive system 1408 (FIG 9) and the registration system 1116 (FIG 2), all of which use the same communication network 1124 (FIGs 4A and 9). In the Office Action, last paragraph of page 11, Examiner appears to assert that Popp's network 1124 between the drive system 1408 and the conveyor 1406 is not the network 1124 between the camera 1404 and the information exchange 1110. However, Popp's network 1124 is not taught as two networks, but as a single network. Popp col. 21, lines 10-16: "*Preferably, the communication network 1124 comprises a distributed node, shared memory system wherein camera inspection system 1104, information exchange 1110, quality system 1112, machine set point database 1114, registration system 1116, operator interface 1118, waste/delay database 1120, and/or raw material database 1122 comprise nodes of the network.*" See FIG 4A, which shows the network 1124 interconnecting all elements, including the information exchange 1110 and the production line1102.

Popp's information exchange 1110 operates the drive system 1408 as a programmable logic controller. Popp col. 20, lines 13-17 (FIG 9): "*More particularly, in one such an embodiment, information exchange 1110 comprises a personal computer (PC) running SoftLogix™ v.10, available from Rockwell Automation. Advantageously, such a configuration allows the PC to operate as a "soft" PLC.*"

This lack of independence between the measuring network 1124, the information exchange 1110, the operating network 1124, and production operating systems 1116, 1102 allows feedback to occur between detection, analysis, and operation. Applicants' independent measuring system offers substantial advantages in avoiding undesirable feedback (termed "retroaction" in the specification), and in accuracy and timeliness, by bypassing automation control bus failures, delays, and reconfigurations. It also allows a direct comparison and analysis of process variables before and after a control bus modification. This feature is recited in the last element of independent claim 41.

Simonetti predicts a current or downstream position of an earlier-detected defect in a continuous moving web. In contrast, Applicants locate an upstream source of a failure on a

production line. These are two different goals and results. Combining Simonetti with Popp would not produce the invention as claimed. Simonetti only applies to a continuous web. Popp distinguishes his invention in col. 22, lines 24-26: "*This is unlike prior art inspection systems that attempt to capture quality data in real time in connection with continuous webs of materials.*"

Adding the time correlation feature of Simonetti to Popp would not improve Popp's approach to locating a failure source on a production line, because Simonetti predicts a later position of a defect, not an earlier cause of a defect. Simonetti would have to be applied to Popp in reverse, guided by the present invention.

On second par. of page 11 of the Office Action, Examiner provides a hypothetical method of operating a combination of Popp and Simonetti that is not suggested or implied by either reference. This proposed method is not claimed by Applicant.

Card and Buda do not address the shortcomings of Popp and Simonetti argued above.

(Please proceed to the next page.)

Conclusion

M.P.E.P. 2143.03 provides that to establish prima facie obviousness of a claimed invention, all words in a claim must be considered in judging the patentability of that claim against the prior art. If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious.

As argued above, the proposed combinations lack features claimed in the independent claim herein. Thus the proposed combination does not support the obviousness rejections of the claimed invention. Applicants feel this application is in condition for allowance, which is respectfully requested.

The commissioner is hereby authorized to charge any appropriate fees due in connection with this paper, including fees for additional claims and terminal disclaimer fee, or credit any overpayments to Deposit Account No. 19-2179.

Respectfully submitted,

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